

30 April 2003
Application No.: 09/645,827
Docket: 1000.06

b.) Amendments to the Claims

1. (previously amended) An optical system production line, comprising an optical bench supply that provides optical benches; a component supply that provides optical components; a pick-and-place machine that receives optical benches from the bench supply, picks optical components from the optical component supply, and attaches the optical components to the optical benches; and an optical system aligner that characterizes the positions of the optical components, which have been attached to the optical benches, and mechanically adjusts the relative positions of the optical components.
2. (original) An optical system production line as claimed in claim 1, wherein the pick-and-place machine secures the optical components to the bench by solder bonding.
3. (previously amended) An optical system production line as claimed in claim 1, wherein the optical system aligner characterizes the positions of the optical components by activating optical links of optical systems on the benches, detecting optical signals after interaction with at least some of the optical components, and adjusting the optical components to optimize transmission of optical signals over the links.
4. (previously amended) An optical system production line as claimed in claim 1, wherein the optical system aligner energizes active components of optical systems on the benches and adjusts the optical components to optimize optical signal transmission through the systems from the active optical components.
5. (previously amended) An optical system production line as claimed in claim 1, wherein the optical system aligner energizes active components of optical systems and adjusts positions of at least one passive optical component in each of

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the optical systems to optimize optical signal transmission from the active components to the at least one passive component.

6. (previously amended) An optical system production line as claimed in claim 1, wherein the optical system aligner energizes active components of optical systems and adjusts positions of at least two passive optical components in each of the optical system to optimize optical signal transmission between the passive components.

7. (original) An optical system production line as claimed in claim 1, wherein the pick and place machine is a flip-chip bonder.

8. (previously amended) An optical system production line as claimed in claim 1, wherein the optical system aligner comprises two jaws for engaging a mounting structure supporting the optical component and moving the structure relative to the bench.

9. (previously added, withdrawn) An optical system production method, comprising

supplying optical benches from an optical bench supply;
style="padding-left: 40px;">supplying optical components from a component supply;
style="padding-left: 40px;">receiving optical components from the optical component supply and optical benches from the optical bench supply at a pick-and-place machine;
style="padding-left: 40px;">attaching the optical components to the optical benches with the pick-and-place machine;
style="padding-left: 40px;">characterizing positions of the optical components, which have been attached to the optical benches; and
style="padding-left: 40px;">mechanically adjusting the relative positions of the optical components with an optical system aligner.

10. (previously added, withdrawn) An optical system production method as claimed in claim 9, wherein the step of attaching the optical components to the

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optical benches with the pick-and-place machine comprises solder bonding the optical components to the optical benches.

11. (previously added, withdrawn) An optical system production method as claimed in claim 9, wherein the step of characterizing the positions of the optical components comprises:

the optical system aligner activating optical links of optical systems;
detecting optical signals after interaction with at least some of the optical components; and
adjusting the optical components to optimize transmission of the optical signals in the optical systems.

12. (previously added, withdrawn) An optical system production method as claimed in claim 9, wherein the step of characterizing the positions of the optical components comprises:

energizing active components of optical systems; and
adjusting the optical components to optimize optical signal transmission through the optical systems from the active optical components.

13. (previously added, withdrawn) An optical system production method as claimed in claim 9, wherein the step of characterizing the positions of the optical components comprises:

energizing active components of optical systems; and
adjusting a position of at least one passive optical component in each of the optical systems to optimize optical signal transmission from the active components through the optical systems.

14. (previously added, withdrawn) An optical system production method as claimed in claim 9, wherein the step of characterizing the positions of the optical components comprises:

energizing active components of optical systems; and

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adjusting positions of at least two passive optical components in each of the optical systems to optimize optical signal transmission between the passive components.

15. (previously added, withdrawn) An optical system production method as claimed in claim 9, wherein the pick and place machine is a flip-chip bonder.

16. (previously added, withdrawn) An optical system production method as claimed in claim 9, wherein the step of mechanically adjusting the relative positions of the optical components comprises engaging mounting structures supporting the optical components and moving the structures relative to the optical benches with the optical system aligner.

17. (new) An optical system production line, comprising
an optical bench supply for providing optical benches;
a component supply for providing optical components;
a pick-and-place machine for receiving optical benches from the bench supply,
and for picking optical components from the optical component supply,
and for attaching the optical components to the optical benches; and
means for characterizing the positions of the optical components attached to
the optical benches, and for mechanically adjusting the relative positions
of the optical components attached to the benches.

18. (new) An optical system production line as claimed in claim 17, further comprising the pick-and-place machine securing the optical components to the benches by solder bonding.

19. (new) An optical system production line as claimed in claim 17, further comprising the characterizing and adjusting means characterizing the positions of the optical components by activating optical links of optical systems on the benches, detecting optical signals after interaction with at least some of the optical components, and adjusting the optical components to optimize transmission of optical signals over the links.

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20. (new) An optical system production line as claimed in claim 17, further comprising the characterizing and adjusting means energizing active components of optical systems and adjusting positions of at least one passive optical component in each of the optical systems to optimize optical signal transmission from the active components to the at least one passive component.